Facilities Planning and Construction

Division of Administration & Finance

# CAPITAL PROJECT PLANNING

## PROGRAMMING GUIDELINES

# Purpose of this Document

The University of Houston System requires that for each capital project, a comprehensive program of requirements with a detailed cost estimate must be completed. Once a project goes through this exercise and funding is identified, the project may go the Board of Regents for approval to move into design.

A complete facility program is done to reduce the amount of changes and potential cost increases that can occur during a project. Other benefits include:

- All interested parties have an early opportunity to provide input and discuss issues.
- Project needs can be developed into hard requirements before the project begins
- Concepts can be tested and various options can be evaluated inexpensively during the programming exercise.
- The project scope of work can be clearly defined before engaging architects and engineers.

## Definition of Facility Programming

Facility programming is the process of collecting, analyzing, synthesizing and documenting all (or most) of the requirements for a capital improvement project prior to beginning design. The final program document becomes the building instruction manual for the architects and engineers.

Programming has a significant impact on the outcome of the construction of a capital improvement project. It is much easier to influence a project's outcome during the early stages of a project (when expenditures are relatively minimal than it is to affect the outcome as the project moves forward.

## Program Guidelines

These guidelines are to be used as a tool to prepare a project program. The guidelines are generic in nature to be used for all University capital projects.

# Table of Contents

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# Introduction

The University of Houston has implemented at Capital Improvement Program (CIP). This is a five year plan that details the long-range strategy to maintain and enhance the System's resources. The CIP allows for strategic planning for projects with a debt load over $5M.

Once a project is identified in the CIP it must go through programming. The completed program document will be presented to the Board of Regents for project approval.

## Purpose of Programming

The purpose of programming is to:

- Finalize the project objectives.
- Determine the building and user requirements.
- Establish a total building area.
- Set the scope of work to align with the project budget.

At this point it is possible to estimate a realistic project cost, to which yearly escalation factors may be added to account for construction or occupancy delays.

Programming involves gathering information from the intended building occupants and user groups through group and individual interviews. The programmer researches current and projected needs in such areas as information and instructional technology, academic teaching methods, privacy and security.

This results in a comprehensive description of the necessary components of the construction project.

The project program, the end result of programming, describes how the finished project will "work": how it will function for the building occupants and how it will meet all the project requirements.

# Introduction

## The Final Project Program

When the programming is complete, the final program document will communicate the following to key members of the project team:

- Strategic and master planning requirements (a project program will comply with and expand upon the already approved campus master plan)
- Space and functional relationships
- Site location and utility considerations
- Determination of the total project cost and proposed project schedule
- Final recommendations presented in a clear and succinct manner
- Required expertise from the project design team
- Concerns among all interested parties about the project scope, schedule, risks and plan of execution

# Project Program –

# Sign-Offs

Provide a page for required signatures by those approving the facility program. Signatures should be obtained when the program document is complete.

## Minimum Required Signatures for Program Approval

- Contact Planning representative for the program approval list.

This page also includes the acknowledgement of all other participants who were involved in the programming process.

## Acknowledgements

- Executive Steering Committee Members
- User Groups
- Facilities Operations/Maintenance
- Any other participants

# Project Program –

# Executive Summary

This should be a synopsis of the major points contained within the program document. The executive summary should provide the reader with a quick understanding of the project scope, budget and schedule.

## Project Description and Scope

- University Mission Statement
- Project Description/Scope Narrative
- Project Justification
- Efficiency Factors Used
    - Assignable Square Footage
    - Gross Square Footage
- Opinion of Probable Costs
    - Construction Cost Limitation
    - Soft Cost Percentage + Furniture Budget
    - Total Project Cost

# Project Program –
# Project Vision & Goals

This portion of the project program establishes the basis for the project. It describes why the project is necessary for the department(s) and College and it affirms that the project aligns with the stated direction of the University.

## Project Vision and Goals

- Explain how the project complies with or will enhance the stated mission and vision of the University and the College/department.
- Explain how the project will support the academic direction of the institution and the overall need of the project for the next 5-years.
- Should show how the project will comply with or enhance the campus master plan.
- Describe the main objectives for the project.

## Examples

### ASPIRATIONS

- Reflect the educational power and excellence of the Law Center
- Provide the capabilities, environment, and **image of a top-tier law school** in a major city
- Become a permanent top tier U.S. News & World Report law school
- Recruit **well-credentialed, diverse students and faculty**
- Be a leader in sustainable design

### FEEL

- Create a smart building balancing the needs of the Law Center with available resources
- Create **a sense of community** through organic connections over multiple floors
- Celebrate and **support diversity of students**
- Create a timeless building

# Project Program –

# Site Development

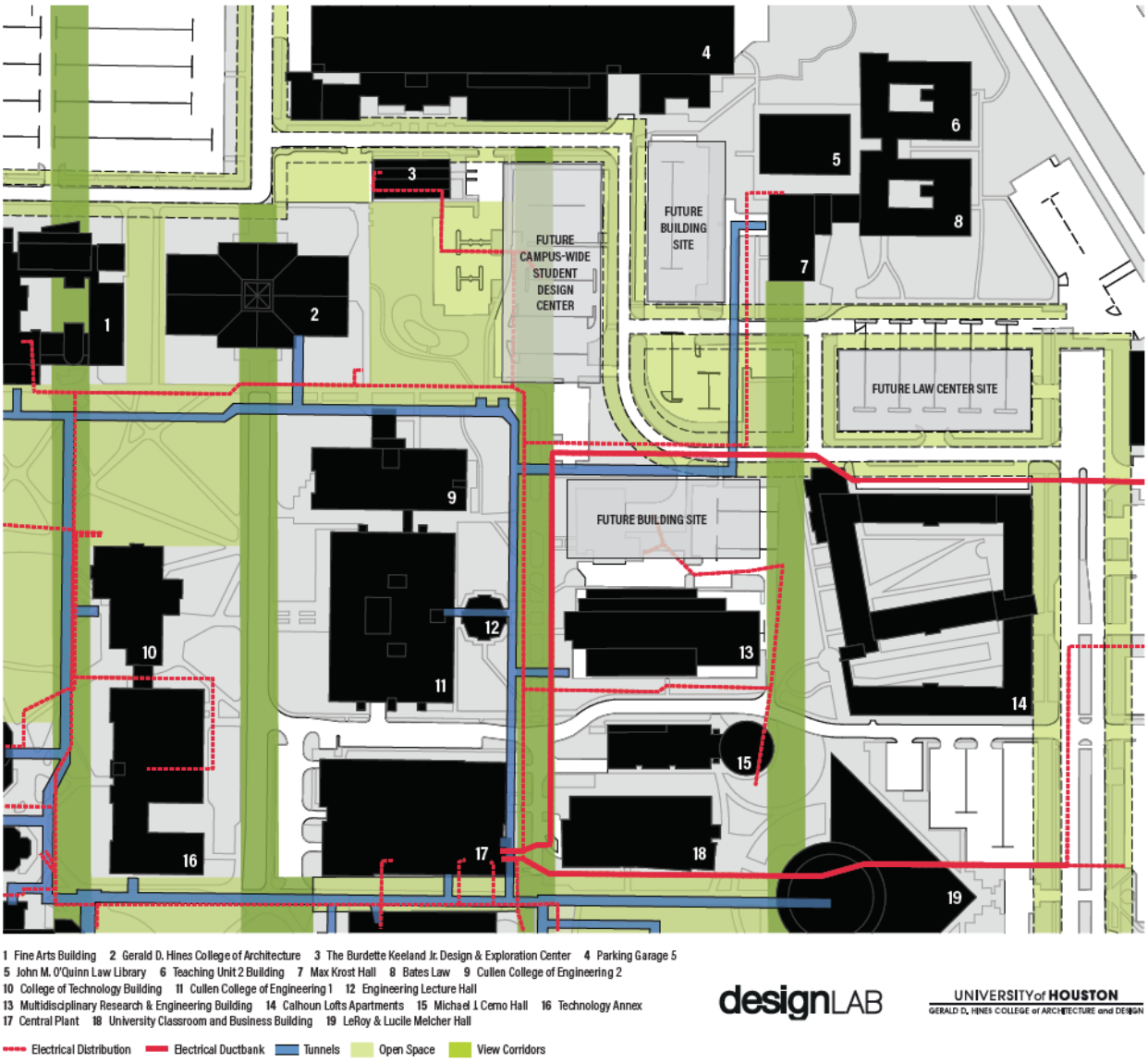
This section analyzes the proposed site or sites for the project. It should address all of the factors acting upon each site that will affect the design of the facility.

- Prepare the site analysis in collaboration with the University Architect and the Director of Engineering Services.\
- Address the following topics:
    - Site Introduction
    - Site Location and Orientation (including climate, prevailing winds and solar angles)
        - Illustrate how the proposed project and its site reinforce the University master plan
        - Identify potential synergies with neighboring buildings and open space
    - Site Circulation
        - Pedestrian
        - Vehicular and parking
        - Service access
        - Emergency vehicle access
    - Site Constraints and Opportunities
        - Visual connections, primary entries
        - Site boundaries, setbacks, build-to lines
        - Location of any easements or setbacks
        - Storm water detention
- Site Utilities
    - Availability, locations and expected connection points
- Landscaping overview
- Other
    - Alternative site studies, if required
    - Description of any known environmental issues that would limit use of the site or necessitate additional project costs such as hazardous waste cleanup
    - Diagram showing intended expansion during any future phases
    - Any other significant site influences on the design

# Project Program –

# Site Development

## Site Analysis Example



# Project Program –

# Benchmarking/Lessons Learned

## Benchmarking

- If budgets allow, arrange visits to similar institutions or building types are often beneficial to obtain insights and end user feedback and advice.
- Virtual benchmarking of similar institutions or building types is also beneficial, if the project budget does not allow for travel.
- After site visits or virtual benchmarking, the comments and common themes should be documented and included in the final program.

# Project Program –

# Existing Facilities Studies

For projects that involve renovation of existing facilities, address the following topics. Many aspects may also apply if interim space will be used before a new building or renovation is complete.

## Extent of the Remodel

- Provide a floor plan outlining the areas to be remodeled outlined. If an addition to the building will be built, note where the addition is expected.
- List what (if any) furnishings, equipment or other items, if any, that need to be salvaged for re-use after the renovation.

## Code Compliance

- Identify parts of the existing building that are known not to comply with current building codes or requirements. Describe the work that is required to bring the building into compliance.

## Hazardous Materials

- Determine if any portions of the building to be remodeled contain any hazardous materials such as asbestos. Identify the extent of the hazardous materials.

## Temporary Facilities

- Describe any temporary or interim facilities that will be required until the project is completed.
- If specific interim locations have been identified, include information about those facilities.

# Project Program –

# Existing Facilities Studies

## Existing Utilities Studies

- Determine if the existing facility is served by sufficient utility capacity for:
    - Water
    - Sanitary sewer
    - Storm sewer or detention
    - Electricity
    - Chilled water and steam
    - Data
    - Communications
    - Security
- Determine if the proposed project may conflict with any existing utilities.

# Project Program –

# Design Parameters

The design parameters are the standards and constraints that control the project. The program should identify codes and regulations that directly influence the design and construction of the proposed facility.

The State Fire Marshal is the authority having jurisdiction (AHJ) for all issues pertaining to NFPA 101 Life Safety Codes.

The following should be referenced for design compliance:

- National Fire Protection Association - NFPA 101
- International Building Code (IBC)
- Texas Accessibility Standards (TAS)
- FEMA Flood Mapping

The project design objective should be described. In addition, any design constraints should also be noted.

## University of Houston System Standards

Facility Planning & Construction has Master Specifications that apply to the design and construction of all UH System projects.

## Design Guidelines

The UH central campus and some component universities have aesthetic design guidelines. These should be addressed in the program document. Examples include:

- Building design guidelines (from the campus master plan)
- Furnishing guidelines or standards
- Signage standards
- Donor recognition requirements

# Project Program –

# Design Parameters

## Component University Standards

Each component university has their own locally generated technical standards that suit the unique requirements of their campus. Component university standards can have a significant impact on the design & construction of the facility. These standards should be described in the program. They may include the following:

- Equipment or system specifications or standards
- Existing special purchase arrangements with vendors for specific equipment or systems
- Sole source requirements for equipment or systems (to be compatible with existing systems)

# Project Program –

# Space & Adjacency Requirements

This section deals with the space requirements and functional relationships of the program. It describes the facility in physical terms, including:

- The required number of occupants of each room
- Enrollment and/or growth projections
- The quantity and square footage of each room
- Adjacency diagrams that show the relationships between specific rooms and spaces
- Stacking diagrams that locate each area on the desired floors
- Room data sheets that call out specific furniture and equipment requirements for each space and note any other special requirements that need to be accommodated during the design

## Project Overview

- Provides a description of the proposed building/space

## The Texas Higher Education Coordinating Board (THECB)

The Texas Higher Education Coordinating Board (THECB) was created by the Texas Legislature in 1965 to represent the highest authority in the state in matters of public higher education.

The definitions below must be used to illustrate project compliance with THECB:

- **Gross Square Feet (GSF**) – The sum of all enclosed areas on all floors; areas measured to the exterior surface of building walls, including basements and vertical penetrations. Usable area plus building circulation, mechanical rooms, general restrooms, janitor closets, unassigned storage, exterior walls and structure.
- **Assignable Square Feet (ASF)** – The sum of all areas on all floors of a building that is assigned to or available for assignment to an occupant or other specific program use; for example classrooms, offices, conference areas and reception. Does not include circulation areas. Measured from the inside face of enclosing partitions or walls.

# Project Program –

# Space & Adjacency Requirements

## THECB Space Efficiency Requirements

This section is under development

The total gross building is calculated utilizing a factor with the assignable area as the base. This ratio (A:U) is the expression of the assignable areas to the building gross as a percentage. To calculate the gross building size, divide the sum of the assignable space by the appropriate grossing factor.

This type of grossing calculation is common for public and educational building design applications.

## THECB Space Inventory Code Requirements

This section is under development

# Project Program –

# Space & Adjacency Requirements

University Design Guidelines provides standards for many kinds of required “non-program” spaces. The following spaces must be provided in all capital projects.

| | |
|---|---|
| • Mothers Rooms | Any floor - At least one - Min. 7’ x 7’ |
| • All Gender Restrooms | Ground floor |
| • Attic Stock Storage | Ground floor - Min. 8’ x 8’ |
| • Custodial Storage | Ground floor - Min. 8’ x 12’ |
| • Custodial Closets | Each floor |
| • Recycling Rooms/Trash Rooms | Each floor – Min. 8’ x 8’ |
| • Building Distribution Frame (BDF) | Ground floor |
| • Intermediate Distribution Frame (IDF) | Each floor |
| • Security Closets | Each floor |

## Auxiliary Services – Food Location Procedure

If a food or beverage provider is proposed to be located within the facility, the Department of Auxiliary services must be notified to review and determine viability.

- Auxiliary Services and the UH food service provider will review the space and develop sales projections based on the service location.
- A recommendation will be presented to the University of Houston System Food Service Advisory Committee (FSAC) for review and approval.
- The FSAC recommendation will be provided to the Associate Vice Chancellor of Administration for review and to determine if revisions to the food service agreement are required.

# Project Program –

# Space & Adjacency Requirements

## Summary Space List

Summarizes all of the space requirements for the project. It should include the total assignable and gross square footage. Specific programming requirements that are associated with non-assignable spaces should be identified (ex. extra wide corridors or impromptu gathering spaces).

## Example

| DEPARTMENT/AREA | SF | PAGE |
|---|---|---|
| Building Entry | 6,020 | *30* |
| Instructional Areas | 24,719 | *34* |
| Student Spaces | 4,160 | *44* |
| Student Organizations | 2,400 | *46* |
| Library/IT | 24,492 | *48* |
| Clinics | 8,054 | *58* |
| Leadership + Admin. Suite | 10,543 | *60* |
| Academic Offices | 11,438 | *62* |
| Centers + Institutes | 3,588 | *63* |
| Student Services, Graduate + Global Programs, Admissions | 4,563 | *64* |
| Advocacy | 1,456 | *65* |
| Support | 3,600 | *66* |
| Exterior Lounge *(asf = total sf/2)* | *1,000*/500 | *67* |
| TOTAL ASF | 105,533 | |
| **TOTAL GSF** *(@ 62% EFFICIENCY)* | **170,214** | |

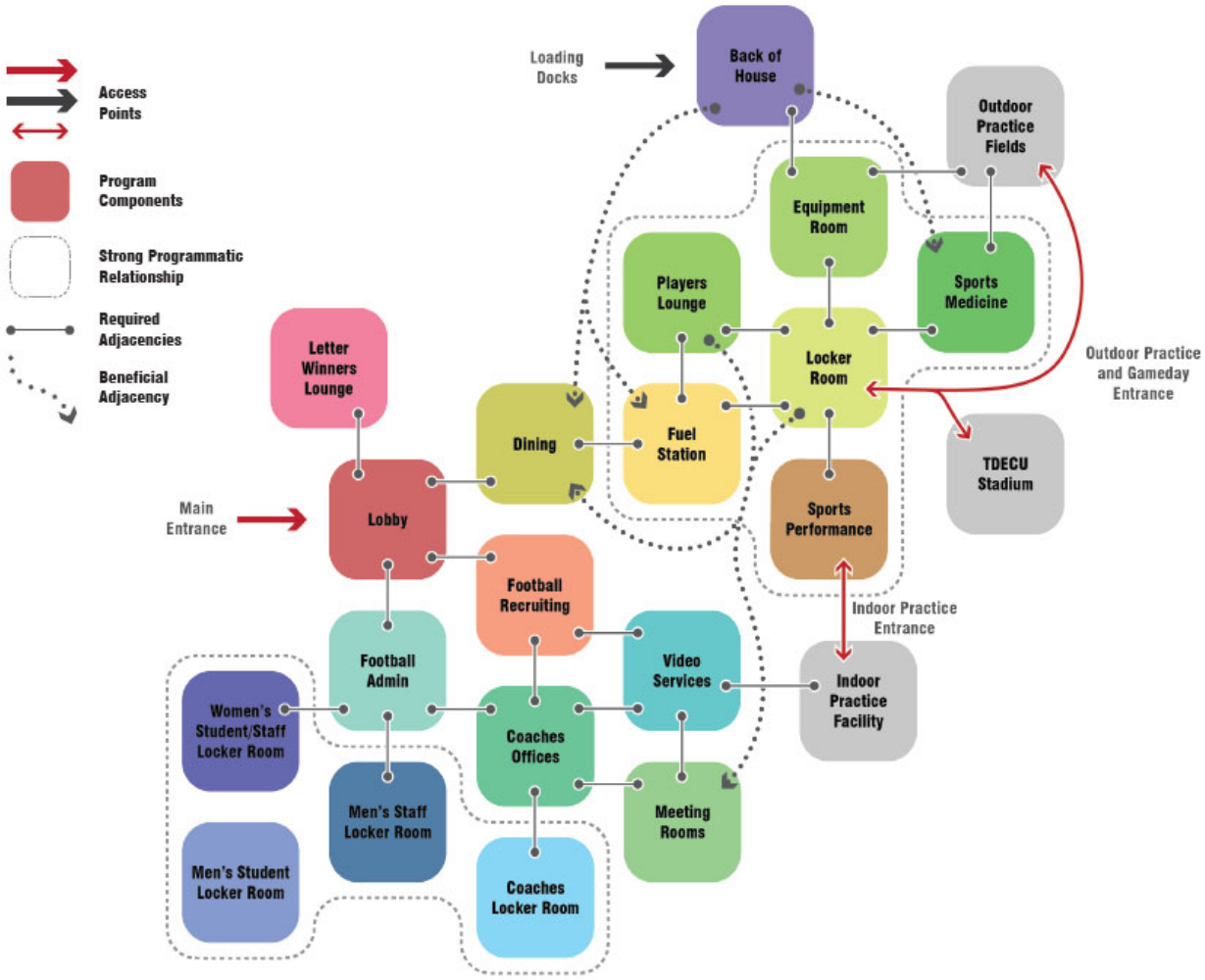
# Project Program –

# Space & Adjacency Requirements

## Adjacency Diagram

This diagram captures the most important adjacencies for the overall space.

## Example



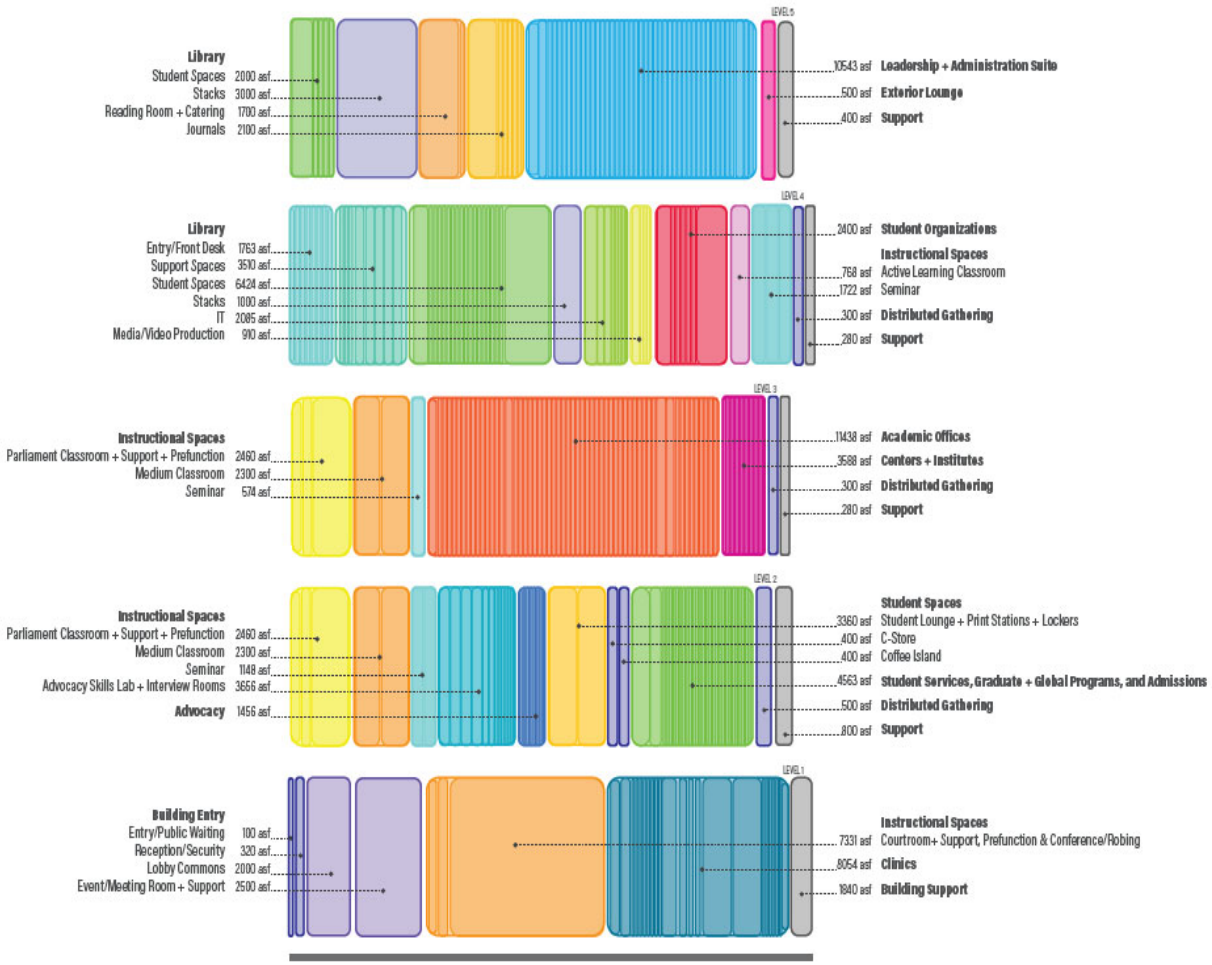
# Project Program –

# Space & Adjacency Requirements

## Stacking Diagram

A tool used to illustrate conceptually where each department or functional unit is placed, or "Stacked," vertically in a multi-story building. Functional adjacencies and space requirements drive a stacking diagram, but it should also reflect the probable site of the project and the campus master plan requirements.

## Example



# Project Program –

# Space & Adjacency Requirements

## Summary Space List

Summarizes all of the space requirements for the project. It should include the total assignable and gross square footage. Specific programming requirements that are associated with non-assignable spaces should be identified (ex. extra wide corridors or impromptu gathering spaces).

## Example

| SPACE | № + SIZE | SF |
|---|---|---|
| Large Classroom Pre-function | 2 @ 400 asf | 800 |
| Dividable Tiered Lecture | 1 @ 6,231 asf | 6,231 |
| Control Room/AV Support | 1 @ 100 asf | 100 |
| Furniture Storage | 1 @ 400 asf | 400 |
| Conf./Robing | 1 @ 200 asf | 200 |
| Parliament Classroom | 2 @ 2,260 asf | 4,520 |
| Medium Classroom | 4 @ 1,150 asf | 4,600 |
| Seminar Room | 6 @ 574 asf | 3,444 |
| Active Learning Classroom | 1 @ 768 asf | 768 |
| **Advocacy Skills** | | |
| Advocacy Skills Lab | 4 @ 574 asf | 2,296 |
| Support Storage | 2 @ 200 asf | 400 |
| Interview/Video Review Rooms | 8 @ 120 asf | 960 |
| TOTAL ASF | | 24,719 |

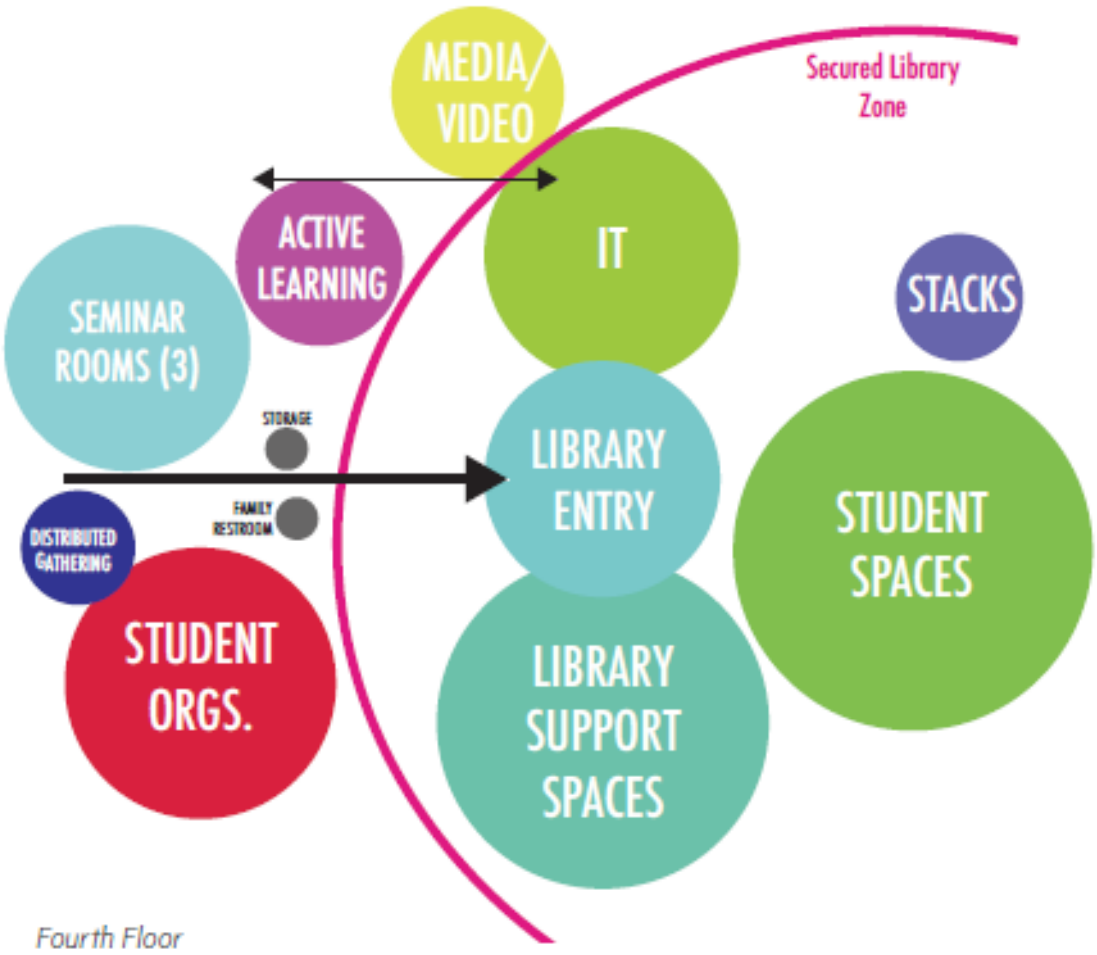
# Project Program –

# Space & Adjacency Requirements

## Functional Relationship Diagram

A functional relationship diagram illustrates the hierarchy of adjacencies on a floor, within a department or within a grouping of rooms. This diagram easily conveys the adjacency requirements so the architect can convert the diagram into a floor plan that maintains all required relationships.

## Example



# Project Program –

# Space & Adjacency Requirements

## Room Data Sheets

Room data sheets contain specific requirements for each space type. All unique features of the space should be listed. This may include:

- Special security or access features
- Special mechanical, electrical or plumbing requirements
- Unique finish requirements
- Furniture or equipment to be relocated or provided by the owner
- Specialty furniture or equipment that will need to be purchased and installed through the project

## Example

### COUNSELING ROOM

Expansion ▹ *VS* ▹ Shared Support

*One-on-one counseling space*

#### SPATIAL CHARACTERISTICS

| | |
|---|---|
| ROOM SIZE | 150 ASF |
| OCCUPANTS | 2 |
| WALL FINISH | Painted GWB |
| FLOOR FINISH | Carpet tiles |
| CEILING FINISH | Suspended acoustical tile |
| DOOR SIZE | 36 in wide |
| EXTERIOR ACCESS | – |
| NATURAL LIGHT | Preferred |

#### ELECTRICAL • IT • AUDIOVISUAL

| | |
|---|---|
| POWER | Standard 120-volt[1] |
| DATA | Ethernet + wireless[1] |
| TELEPHONE | VOIP[1] |
| AUDIOVISUAL | – |
| SECURITY | Standard door lock; panic button[2] |
| LIGHTING | LED[3] |

#### FURNISHINGS • FIXTURES • EQUIPMENT

| | |
|---|---|
| Writable surface(s) | OFOI |
| Table and chairs | OFOI |
| Computer station (for tele-health sessions) | OFOI |
| Telephone | OFOI |

#### NOTES

1 Provide electrical receptacles and ethernet ports along the perimeter walls for convenience and to support a computer workstation

2 Room requires visual access from circulation via a window or side lite

3 Provide non-glare, direct/indirect lighting; utilize task lighting as required

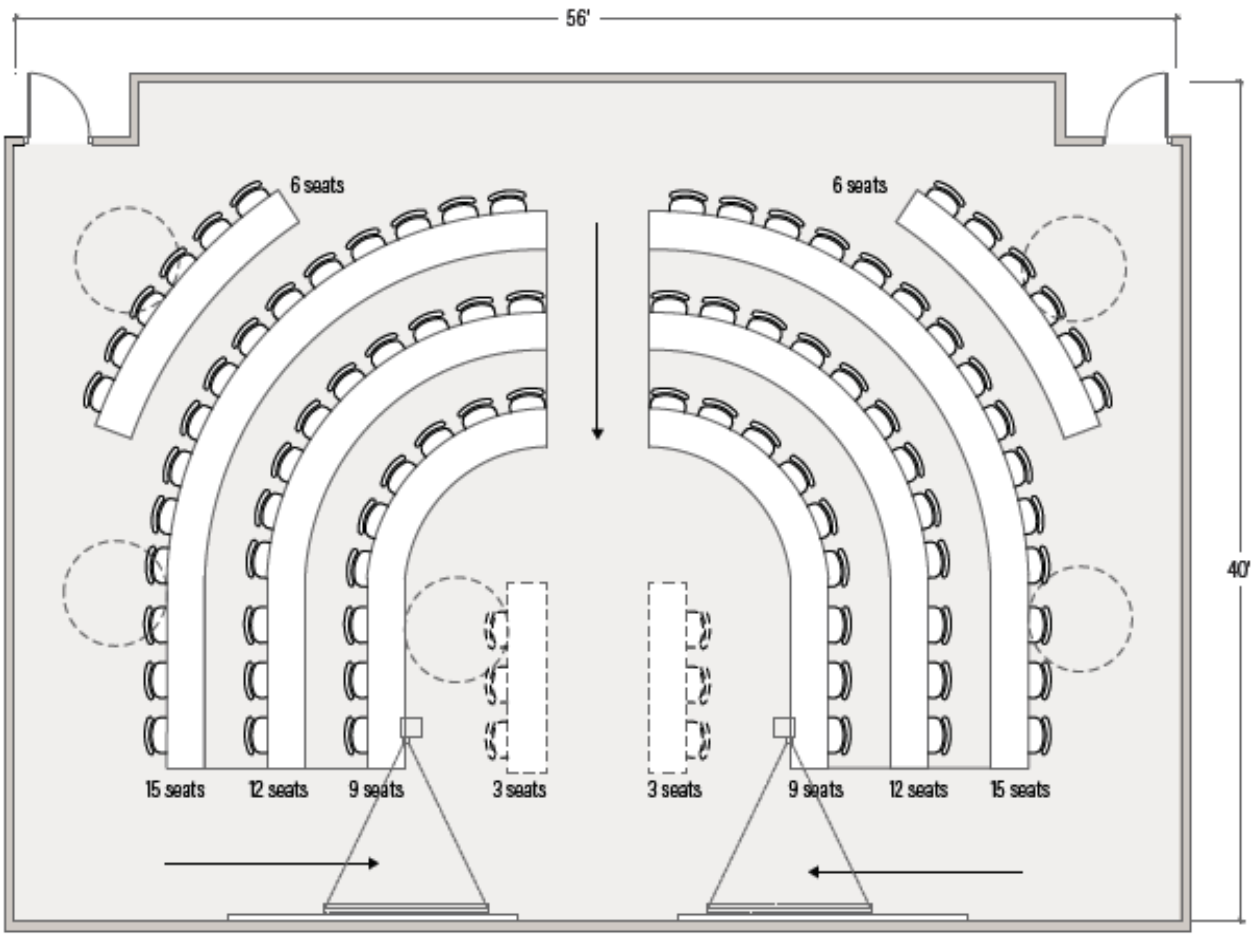
# Project Program –

# Space & Adjacency Requirements

## Test Fits

Test fits are often generated for specialty spaces. They are simplified floor plans that are used to confirm that the stated needs and requirements can be accommodated within a specific size space.

## Example



# Project Program –

# Preliminary Project Budget

The preliminary project budget is a prediction of all costs involved in the project. The estimate should be completed by an independent third-party cost estimating service. The budget shall include all of the following:

- Estimates for the construction contract award amount (CCL)
- Annual construction escalation (CCL)
- Contractor contingency (CCL)
- Soft Costs
    - Project contingency
    - Administrative costs
    - FP&C management fee
- Furniture budget (developed with UH FP&C, using furniture standards & historical cost information)
- Other Costs
    - IT/Security
    - Audio visual equipment
    - Specialty equipment expenses
    - Art program
    - Moving expenses
    - Facilities shop support

The University also requires that an estimated annual operation & maintenance fee be provided. This will be developed by the programming firm with input provided by the University VP of Facilities Services.

# Project Program –

# Preliminary Project Schedule

The preliminary project schedule should be developed in consultation with Facility Planning & Construction and the end users. The schedule should include various milestones, any unusual schedule considerations, submissions and approvals.

## Milestone Example

- Board of Regents Approval
- Procurement (AE Firm and Construction Manager at Risk)
- Design
    - Program Verification
    - Schematic Design
    - Design Development
        - 50% Design Development Document Review
        - Campus Facilities Planning Committee (CFPC) Design Logistics review
        - 100% Design Development Document Review
    - Construction Documentation
        - 90% Construction Documentation Review
- Demolition (if required)
- Construction
- Substantial Completion
- Furniture Installation
- Move-in

If the project is phased or requires interim moves, this should be noted in the preliminary project schedule.

# Project Program –

# Appendices

The program appendices may be included, as necessary. This section may include the following items:

- Supporting Documentation
- Alternate Studies
- Detailed Cost Estimate
- Conceptual Renderings
- User Group Surveys
- Consultant Studies
- Presentations
- Meeting Minutes
- Photos and Information from Benchmarking
- Phasing Studies